What is claimed is:

1. A device for scanning a dataform, comprising: at least one surface emitting laser diode on a substrate for producing a laser beam; beam shaping optics for shaping the beam; and wherein the shaped beam is substantially an essential single spatial mode laser beam.

2. The device according to claim 1, wherein the single spatial mode is the fundamental spatial mode of said shaped beam.

3. The device according to claim 1, further comprising at least one feedback photodetector on the substrate and a feedback optical element receptive of a portion of the beam for directing same to the at least one feedback photodetector.

4. The device according to claim 1, further comprising an oscillatable optical element on the substrate and a stationary optical element for directing the laser beam to the oscillatable optical element.

5. The device according to claim 1, wherein the at least one laser diode is a vertical cavity surface emitting laser.

6. The device according to claim 1, wherein the beam shaping optics comprises at least one aperture and at least one lens.

7. The device according to claim 4, further comprising at least one decode photodetector on the substrate.

8. The device according to claim 7, further comprising a light collecting optical element for directing light reflected from the dataform to the at least one decode photodetector.

9. The device according to claim 1, wherein the at least one laser diode produces an infrared beam.

10. The device according to claim 1, wherein the at least one laser diode produces a visible beam.

11. The device according to claim 3, wherein the at least one feedback photodetector generates feedback for adjusting an input drive signal to the at least one laser diode.

12. The device according to claim 1, wherein said at least one surface emitting laser diode, having a parasitic resistor, operates as a feedback temperature sensor for

adjusting an input drive signal to said at least one surface emitting laser diode.

13. The device according to claim 1, further comprising a series resistor connected to said at least one surface emitting laser diode in series and operative together with said at least one surface emitting laser diode as a feedback temperature sensor for adjusting an input drive signal to said at least one surface emitting laser diode.

14. The device according to claim 1, further comprising an additional diode, having a parasitic resistor, which operates as a feedback temperature sensor for adjusting an input drive signal to said at least one surface emitting laser diode.

15. The device according to claim 1, further comprising an additional diode and a series resistor connected to said additional diode in series, operative together as a feedback temperature sensor for adjusting an input drive signal to said at least one surface emitting laser diode.

16. The device according to claim 1, further comprising an additional diode, having a parasitic resistor, and a series resistor connected to said additional diode in series, wherein said parasitic resistor and said series resistor are operative together as a feedback temperature sensor for adjusting an input drive signal to said at least one surface emitting laser diode.

17. The device according to claim 1, wherein the beam shaping optics comprises at least one integrated aperture and a lens.

18. The device according to claim 17, further comprising a housing for the device.

19. The device according to claim 18, wherein the integrated aperture and lens are integrated into one wall of the housing.

20. The device according to claim 18, wherein the housing is composed of plastic.

21. The device according to claim 18, wherein the integrated aperture and lens are composed of plastic transparent to the laser wavelength.

22. The device according to claim 11, further comprising a housing for the device and at least one feedback optical element receptive of a portion of the beam for directing same to the at least one feedback photodetector, wherein the feedback optical element is a coated surface of said housing.

23. The device according to claim 11, further comprising a housing for the device and at least one feedback optical element receptive of a portion of the beam for directing same to the at least one feedback photodetector, wherein the feedback optical element is an uncoated surface of said housing.

24. The device according to claim 11, wherein the feedback optical element has a reflective surface directing light to the feedback photodetector.

25. The device according to claim 3, wherein the stationary optical element has a reflective surface directing light to the oscillatable optical element.

26. The device according to claim 3, wherein the feedback optical element has a surface directing light to

the feedback photodetector and which is tilted relative to the substrate.

27. The device according to claim 3, wherein the stationary optical element has a surface directing light to the oscillatable optical element and which is tilted relative to the substrate.

28. The device according to claim 3, wherein the at least one laser diode and the feedback photodetector are die bonded to the substrate.

29. A device for scanning a dataform, comprising:

at least one light-emitting laser diode disposed on a substrate;

a feedback sensor disposed on the substrate and receptive of a portion of the laser beam; and

a circuit for applying a drive signal to activate the laser diode and receptive of the output of the feedback sensor for adjusting the drive signal to the laser diode.

30. The device according to claim 29, wherein said at least one light-emitting laser diode is a surface emitting laser diode, producing substantially an essential single spatial mode laser beam.

31. The device according to claim 30, wherein the single spatial mode is the fundamental spatial mode of said laser beam produced by said surface emitting laser diode.

32. The device according to claim 29, wherein said feedback sensor is a feedback photodiode.

33. The device according to claim 29, wherein said at least one light-emitting laser diode is an edge-emitting laser diode mounted on a side on said substrate, said diode directing the laser beam along a first path to a reflective optical element that re-directs said laser beam at an angle to said first path.

34. The device according to claim 33, wherein said reflective optical element is a mirror.

35. The device according to claim 29, further comprising a second photodiode disposed on the substrate for receiving light reflected from the dataform.

36. The device according to claim 35, further comprising an oscillatable first optical element disposed on the substrate and receptive of the laser beam to scan the beam across the dataform.

37. The device according to claim 36, further comprising a second optical element for directing the laser beam to the oscillatable first optical element.

38. The device according to claim 37, further comprising a package for the substrate.

39. The device according to claim 38, wherein said reflective optical element is a part of said package for the substrate.

40. The device according to claim 38, wherein the height of said package is not more than 5mm.

41. The device according to claim 38, wherein the overall volume of said package is not more than 1 cubic inch.

42. The device according to claim 38, wherein the package is non-hermetically sealed.

43. The device according to claim 38, wherein the package is hermetically sealed.

44. The device according to claim 38, wherein the package is surface mountable.

45. The device according to claim 38, wherein the package is composed of molded plastic.

46. The device according to claim 37, wherein the second optical element is a coating on one wall of the package.

47. The device according to claim 37, wherein the second optical element is one wall of the package.

48. The device according to claim 37, further comprising a third optical element for reflecting a portion of the beam to the feedback sensor.

49. The device according to claim 48, wherein the third optical element is a coating on one wall of the package.

50. The device according to claim 48, wherein the third optical element is one wall of the package.

51. The device according to claim 48, further comprising beam shaping optics for shaping the laser beam.

52. The device according to claim 51, wherein the beam shaping optics are integrated in one wall of the package.

53. The device according to claim 51, wherein the beam shaping optics comprise at least one lens and at least one aperture.

54. The device according to claim 51, further comprising collecting optics for directing reflected light to the second photodiode.

55. The device according to claim 54, wherein the collecting optics is integrated into one wall of the package.

56. The device according to claim 54, wherein the beam shaping optics and collecting optics are integrated into the package.

57. The device according to claim 51, wherein the beam shaping optics are refractive.

58. The device according to claim 51, wherein the beam shaping optics is reflective.

59. The device according to claim 51, wherein the beam shaping optics is diffractive.

60. The device according to claim 51, wherein the beam shaping optics is a gradient index lens.

61. The device according to claim 54, wherein the collecting optics is refractive.

62. The device according to claim 54, wherein the collecting optics is reflective.

63. The device according to claim 54, wherein the collecting optics is diffractive.

64. The device according to claim 54, wherein the beam shaping optics is spherical.

65. The device according to claim 54, wherein the beam shaping optics is aspherical.

66. The device according to claim 51, wherein the beam shaping optics comprise a mirror and an aperture.

67. The device according to claim 38, wherein the package is a module for insertion into a personal digital assistant.

68. The device according to claim 67, wherein the height of said module is not more than 5mm.

69. The device according to claim 67, wherein the overall volume of said module is not more than 1 cubic inch.

70. A device for scanning a dataform, comprising:

at least one light-emitting laser diode disposed on a substrate for producing a laser beam;

a temperature sensor utilizing a temperature reading to adjust the drive signal to said at least one light-emitting laser diode; and

wherein the shaped beam is substantially an essential single spatial mode laser beam.

71. The device according to claim 70, wherein said at least one light-emitting laser diode, having a parasitic resistor, which operates as a feedback temperature sensor for adjusting an input drive signal to said at least one light-emitting laser diode.

72. The device according to claim 70, further comprising a series resistor connected to said at least one light-emitting laser diode in series and operative together with said at least one light-emitting laser diode as a feedback temperature sensor for adjusting an input drive signal to said at least one light-emitting laser diode.

73. The device according to claim 70, further comprising an additional diode, having a parasitic resistor, which operates as a feedback temperature sensor for adjusting an input drive signal to said at least one light-emitting laser diode.

74. The device according to claim 70, further comprising an additional diode and a series resistor connected to said additional diode in series, operative together as a feedback temperature sensor for adjusting an input drive signal to said at least one light-emitting laser diode.

75. The device according to claim 70, further comprising an additional diode, having a parasitic resistor, and a series resistor connected to said additional diode in series, wherein said parasitic resistor and said series resistor operate together as a feedback temperature sensor for adjusting an input drive signal to said at least one light-emitting laser diode.

76. A device for scanning a dataform, comprising:

an array of surface emitting laser diodes on a substrate, each for producing substantially an essential single spatial mode laser beam;

beam shaping optics for shaping the beams; and

circuitry for selectively driving combinations of the laser diodes in the array for scanning a dataform.

77. The device according to claim 76, wherein the single spatial mode is the fundamental spatial mode of said laser beam produced by at least one of said array of surface emitting laser diodes.

78. The device according to claim 77, further comprising a photodiode disposed on the substrate for receiving light reflected from the dataform.

79. The device according to claim 78, further comprising an oscillatable first optical element disposed on the substrate and receptive of the laser beam to scan the beam across the dataform.

80. The device according to claim 79, further comprising a second optical element for directing the laser beam to the oscillatable first optical element.

81. The device according to claim 80, further comprising a package for the substrate.

82. The device according to claim 81, wherein the package is hermetically sealed.

83. The device according to claim 81, wherein the package is non-hermetically sealed.

84. The device according to claim 81, wherein the package is surface mountable.

85. The device according to claim 81, wherein the package is composed of molded plastic.

86. The device according to claim 81, wherein the second optical element is a coating on one wall of the package.

87. The device according to claim 81, wherein the second optical element is one wall of the package.

88. The device according to claim 81, further comprising a third optical element for reflecting a portion of the beam to the feedback sensor that adjusts an input drive signal to said circuitry for selectively driving combination of the laser diodes.

89. The device according to claim 88, wherein said feedback sensor is a feedback photodiode.

90. The device according to claim 76, wherein at least one of said array of surface emitting laser diodes, having a parasitic resistor, operates as a feedback temperature sensor utilizing a temperature reading to

adjust an input drive signal to said circuitry for selectively driving combination of the laser diodes.

91. The device according to claim 90, further comprising a series resistor operative together with said at least one of said array of surface emitting laser diodes as a feedback temperature sensor for adjusting an input drive signal to said circuitry for selectively driving combination of the laser diodes.

92. The device according to claim 76, further comprising an additional diode, having a parasitic resistor, which operates as a feedback temperature sensor utilizing a temperature reading to adjust an input drive signal to said circuitry for selectively driving combination of the laser diodes.

93. The device according to claim 92, further comprising a series resistor operative together with said parasitic resistor of said additional diode as a feedback temperature sensor for adjusting an input drive signal to said circuitry for selectively driving combination of the laser diodes.

94. The device according to claim 91, wherein the third optical element is a coating on one wall of the package.

95. The device according to claim 91, wherein the third optical element is one wall of the package.

96. The device according to claim 91, further comprising beam shaping optics for shaping the laser beam.

97. The device according to claim 96 , wherein the beam shaping optics is integrated in one wall of the package.

98. The device according to claim 96, wherein the beam shaping optics comprises at least one lens and at least one aperture.

99. The device according to claim 96, further comprising collecting optics for directing reflected light to the second photodiode.

100. The device according to claim 99, wherein the collecting optics is integrated into one wall of the package.

101. The device according to claim 99, wherein the beam shaping optics and collecting optics are integrated into the package.

102. The device according to claim 99, wherein the beam shaping optics is refractive.

103. The device according to claim 99, wherein the beam shaping optics is reflective.

104. The device according to claim 99, wherein the beam shaping optics is diffractive.

105. The device according to claim 99, wherein the beam shaping optics is a gradient index.

106. The device according to claim 99, wherein the collecting optics is refractive.

107. The device according to claim 99, wherein the collecting optics is reflective.

108. The device according to claim 99, wherein the collecting optics is diffractive.

109. The device according to claim 99, wherein the beam shaping optics is spherical.

110. The device according to claim 99, wherein the beam shaping optics is aspherical.

111. A personal digital assistant having a housing containing the scanning device according to claim 54.

112. A writing instrument having a housing containing the device according to claim 54.

113. A ring mounted device having a housing containing the device according to claim 54.

114. A key chain scanner having a housing containing the device according to claim 54.

115. A cellular telephone having a housing containing the device according to claim 54.

116. A computer terminal having a housing containing the device according to claim 54.

117. A computer pointing device having a housing containing the device according to claim 54.

118. A modular scan engine having a housing containing the device according to claim 54.

119. A set top box having a housing containing the device according to claim 54.

120. A remote control unit having a housing containing the device according to claim 54.

121. A modular infrared data port for a device comprising the device according to claim 54 and wherein the laser diode produces an infrared beam.

122. A method for manufacturing a non-edge emitting laser diode package, comprising the steps of:

manufacturing a substrate;

attaching at least one vertical cavity surface emitting laser and at least one photodiode to predetermined areas on the substrate and electrically connecting at least one vertical cavity surface emitting laser and at least one photodiode to the substrate in a predetermined manner;

forming a plastic housing on the head assembly to encompass the vertical cavity surface emitting laser and the photodiode;

providing at least one beam-shaping optical element; and

providing a partially reflective optical element in the housing to direct light from at least one vertical cavity surface emitting laser to the photodiode.

123. The method according to claim 122, wherein the step of attaching at least one vertical cavity surface emitting laser on the substrate is die bonding.

124. The method according to claim 122, wherein the step of attaching at least one vertical cavity surface emitting laser on the substrate comprises applying a controlled amount of an adhesive to the substrate and mounting the laser diode die under pressure.

125. The method according to claim 122, wherein the step of attaching at least one vertical cavity surface emitting laser on the substrate comprises a soldering operation.

126. The method according to claim 122, wherein the step of die bonding the laser on the substrate comprises applying an adhesive film, mounting the laser diode die on the film and curing under pressure.

127. A bar code scanner having at least one vertical cavity surface emitting laser comprising:

a substrate;

a vertical cavity surface emitting laser, die bonded to the substrate, said laser responsive to the electrical input current for generating a beam of light;

a reflective optical element;

a photodiode, die bonded to the top surface of the substrate proximate to the vertical cavity surface emitting laser, arranged to receive at least a portion of the beam of light, for generating feedback for adjusting an electrical input current to the vertical cavity surface emitting laser based on a received optical power of the portion of the light received,

wherein the vertical cavity surface emitting laser and the photodiode are injection molded in a predetermined shaped package, and wherein the optical element is part of the molded package and directs light from the vertical cavity surface emitting laser to the reflective optical element and to the photodiode.

128. The scanner according to claim 127, further comprising a housing for the device.

129. The scanner according to claim 127, wherein the housing is surface mountable.

130. The scanner according to claim 127, further comprising a beam shaping optical element and feedback optical element are integrated into the housing above the vertical cavity surface emitting laser and the photodiode.

131. The scanner according to claim 129, wherein the housing is composed of plastic.

132. The scanner according to claim 129, wherein the whole scanner is surface mountable.

133. The scanner according to claim 132, wherein the whole scanner is surface mountable through the apertures in the substrate for electrical connection.

134. A method for correcting the curvature of a curved smiley scan line in the optical scanner, said line produced on a scanned target by the first optical element of said scanner that directs at least one light beam produced by the light source of said scanner, comprising the step of bending back said at least one light beam by the defined incident angle that matches the curvature of the scan beam at the optical surface of said first optical element.

135. A method of claim 134, wherein said optical element is a rotating mirror.

136. A method of claim 134, wherein said light source is at least one laser.

137. A method of claim 134, wherein said light source is at least one surface emitting laser diode.

138. A method of claim 134, wherein said step of bending back said at least one light beam is accomplished by placing a second optical element into the path of said at least one light beam.

139. A method of claim 138, wherein said second optical element has plano-convex configuration.

140. A method of claim 138, wherein said second optical element has plano-concave configuration.

141. A method of claim 138, wherein said second optical element has a plurality of surfaces with different curvatures.

142. A method of claim 138, wherein said second optical element comprises a diffractive optical element.

143. A method of claim 138, wherein said second optical element comprises a refractive optical element.

144. A method of claim 143, wherein said refractive optical element is a Fresnel conical section.

145. A method of claim 138, wherein said second optical element is a cylindrical mirror.

146. A method of claim 145, wherein said cylindrical mirror is tilted away from the axis of rotation of said first optical element by a defined angle.

147. A method of claim 145, wherein said second optical element is a conical mirror.

148. A method of claim 147, wherein said conical mirror is tilted away from the axis of rotation of said first optical element by a defined angle.

149. A method of claim 148, wherein said second optical element directs a specular reflection away from the first optical element.

150. A device for scanning a dataform comprising a first optical element, a light source directing at least one light beam to said first optical element, wherein said light beam is bent back by a defined incident angle and matching the radius of curvature of said light beam, thereby correcting the curvature of a curved smiley scan line produced on said scanned dataform.

151. A device according to claim 150, wherein said optical element is a rotating mirror.

152. A device according to claim 150, wherein said light source is at least one laser.

153. A device according to claim 150, wherein said light source is at least one surface emitting laser diode.

154. A device according to claim 150, wherein said at least one light beam is bent back by a second optical element placed into the path of said at least one light beam.

155. A device according to claim 154, wherein said second optical element has plano-convex configuration.

156. A device according to claim 154, wherein said second optical element has plano-concave configuration.

157. A device according to claim 154, wherein said second optical element has a plurality of surfaces with different curvatures.

158. A device according to claim 154, wherein said second optical element comprises a diffractive optical element.

159. A device according to claim 154, wherein said second optical element comprises a refractive optical element.

160. A device according to claim 159, wherein said refractive optical element is a Fresnel conical section.

161. A device according to claim 154, wherein said second optical element is a cylindrical mirror.

162. A device according to claim 161, wherein said cylindrical mirror is tilted away from the axis of rotation of said first optical element by a defined angle.

163. A device according to claim 154, wherein said second optical element is a conical mirror.

164. A device according to claim 163, wherein said conical mirror is tilted away from the axis of rotation of said first optical element by a defined angle.

165. A device according to claim 154, wherein said second optical element directs a specular reflection away from the first optical element.

166. A device for scanning a dataform, comprising:

at least one light-emitting laser diode disposed on a substrate;

a focusing optical element that receives at least one laser beam from said at least one light-emitting laser diode along a first path;

a feedback sensor disposed on the substrate and receptive of a portion of said laser beam; and

a circuit for applying a drive signal to activate the laser diode and receptive of the output of the feedback sensor for adjusting the drive signal to the laser diode.

167. The device according to claim 166, wherein said at least one light-emitting laser diode is a surface emitting laser diode, producing substantially an essential single spatial mode laser beam.

168. The device according to claim 167, wherein the single spatial mode is the fundamental spatial mode of said laser beam produced by said surface emitting laser diode.

169. The device according to claim 166, wherein said feedback sensor is a feedback photodiode.

170. The device according to claim 166, further comprising a second photodiode disposed on the substrate for receiving light reflected from the dataform.

171. The device according to claim 170, further comprising a first optical element disposed on the substrate and receptive of said at least one laser beam to scan it across the dataform.

172. The device according to claim 171, wherein said first optical element is an oscillatable micromachined mirror disposed on said substrate.

173. The device according to claim 171, further comprising a second optical element for directing said at least one laser beam to a third optical element along a second path that is different from said first path.

174. The device according to claim 173, wherein said first path and said second path are at 90^0 to each other.

175. The device according to claim 173, wherein said at least one laser beam is redirected by said third optical element to said first optical element along a third path that is at an angle to said second path.

176. The device according to claim 175, further comprising a package for the substrate.

177. The device according to claim 176, wherein said package comprises a plastic cap mounted on said substrate.

178. The device according to claim 177, wherein said at least one light-emitting laser diode is an edge-emitting laser diode mounted on a side on said substrate, said diode directing said at least one laser beam to a reflective optical element along a path that is at an angle to said first path, wherein said reflective element re-directs said laser beam along said first path.

179. The device according to claim 178, wherein said reflective optical element is a mirror.

180. The device according to claim 178, wherein said reflective optical element is a lens.

181. The device according to claim 178, wherein said reflective optical element is a part of said plastic cap mounted on said substrate.

182. The device according to claim 176, wherein the height of said package is not more than 5mm.

183. The device according to claim 176, wherein the overall volume of said package is not more than 1 cubic inch.

184. The device according to claim 176, wherein the package is non-hermetically sealed.

185. The device according to claim 176, wherein the package is hermetically sealed.

186. The device according to claim 176, wherein said second optical element provides total internal reflection (TIR) for the light received along said first path from said focusing optical element.

187. The device according to claim 186, wherein said second optical element is one wall of said package.

188. The device according to claim 186, wherein said second optical element is a coating on one wall of said package.

189. The device according to claim 176, wherein said third optical element provides total internal reflection (TIR) for the light received along said second path from said second optical element.

190. The device according to claim 189, wherein said third optical element is one wall of said package.

191. The device according to claim 189, wherein said second optical element is a coating on one wall of said package.

192. The device according to claim 176, wherein said focusing optical element comprises at least one lens and at least one aperture.

193. The device according to claim 172, wherein the focal length of said lens is at least 2.5 mm.

194. The device according to claim 176, further comprising a second focusing optical element directing said at least one laser beam along said third path to said first optical element for scanning across the dataform.

195. The device according to claim 194, wherein said second focusing optical element comprises at least one lens and at least one aperture.

196. The device according to claim 194, wherein said focusing optical element and said second focusing optical element are both integrated into the package.

197. The device according to claim 194, wherein said focusing optical element and said second focusing optical element are parts of a thick biconvex lens.

198. The device according to claim 194, wherein said thick biconvex lens is integrated into the package.

199. The device according to claim 176, further comprising collecting optics for directing reflected light reflected from the dataform to said second photodiode disposed on the substrate.

200. The device according to claim 199, wherein said collecting optics are integrated into the package.

201. The device according to claim 199, wherein said collecting optics comprise a plurality of overlapping lenses.

202. The device according to claim 201, wherein at least one of said plurality of overlapping lenses comprises a prism.

203. The device according to claim 201, wherein the focal point of at least one of said plurality of overlapping lenses is de-centered.

204. The device according to claim 199, wherein said collecting optics is refractive.

205. The device according to claim 199, wherein said collecting optics is reflective.

206. The device according to claim 199, wherein the collecting optics is diffractive.

207. The device according to claim 176, wherein the area around said focusing optical element is tilted toward said feedback sensor and reflects a portion of light from said at least one light-emitting laser diode to said feedback sensor.

208. The device according to claim 176, wherein the area around said focusing optical element is curved for directing more light toward said feedback sensor.

209. The device according to claim 176, wherein the area around said focusing optical element provides is a total internal reflection (TIR) surface, reflecting light toward said feedback sensor.

210. The device according to claim 176, wherein the package is a module for insertion into a personal digital assistant.